

## ORIGINAL ARTICLE

# Management of the wound care clinic during the novel coronavirus pneumonia pandemic period: Sharing of management experience in a general hospital of China

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**Abstract**

With the surge in the confirmed cases of the novel coronavirus pneumonia, medical resources in many countries have been put on red alert levels. The operation management systems of hospitals, including wound care clinics, must be innovated to ensure the normal operation of the hospital and meet the medical care needs of the people. At the same time, scientific control measures are also required to prevent the spread of the novel coronavirus pneumonia in the hospital. Actually, during the novel coronavirus pneumonia pandemic, emergency management methods for wound care clinics such as online appointments and remote online diagnosis and treatment, the rational arrangement of human resources, the scientific implementation of epidemic prevention and control measures, and the strict implementation of the management of the clinic environment and item disinfection measures to strengthen the management of protective materials, wound care materials, and dressing equipment by partition have been introduced and innovated, thus helping reduce the gathering of people in wound care clinics, create a safe medical environment, and avoid the spread of the novel coronavirus pneumonia caused by diagnosis and treatment.

**KEYWORDS**

human resources, medical process, novel coronavirus pneumonia, protective measures, wound care clinic

**Key Messages**

- the COVID-19 pandemic is causing extreme stress and challenges to global health systems
- during the COVID-19 pandemic, the wound care clinics of Chinese general hospitals innovated emergency management processes and measures to meet the wound care needs of different types of patients
- comprehensive assessment of chronic wound patients and development of individualised wound care pathways

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- share the management experience of wound care clinics in Chinese general hospitals, including specific content and details such as nursing pathways, human resource management, material and equipment management, environmental management, and protective measures. It is hoped that we can cross racial and national lines to ensure that every wound patient receives adequate care during the COVID-19 pandemic

## 1 | INTRODUCTION

Since December 2019, a large number of new coronavirus pneumonia (NCP) cases have been reported in Wuhan City, Hubei Province, China and its surrounding cities.<sup>1,2</sup> However, as early as March 2019, the NCP was detected by a research team from the University of Barcelona, Spain,<sup>3</sup> and many confirmed cases were also reported in Italy, the United Kingdom, and the United States.<sup>4-6</sup>

The NCP is a new strain of coronavirus that has never been found in the human body before, and it was officially named by the World Health Organization as 2019 coronavirus disease (COVID-19) on 12 January 2020. Besides, its causative agent, which was initially called the '2019 novel coronavirus (2019-nCoV)', was later renamed as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)<sup>7</sup> by the International Committee on Taxonomy of Viruses on 11 February 2020. Apart from that, COVID-19 has high infectivity and high concealment,<sup>8</sup> which led to its rapid spread around the world.

As of 9 January 2022, COVID-19 has spread in 224 countries worldwide, with more than 300 million confirmed cases and more than 5.5 million deaths.<sup>9</sup> Moreover, many SARS-CoV-2 variants, such as the Delta and Omicron strains, have emerged,<sup>10,11</sup> and the effective protection rate of vaccines has decreased,<sup>12</sup> which resulted in a further surge in the number of confirmed diagnoses worldwide. In this case, it can be seen that a new round of the pandemic is breaking out and spreading rapidly around the world. As the world is shrouded in the shadow of the COVID-19 pandemic, the prevention and control of COVID-19 have re-entered the key period.

As the first country that discovers the COVID-19 on a large scale, China has experienced large outbreaks and repeated local outbreaks of COVID-19 and accumulated rich and successful experience in epidemic prevention and control management.<sup>13</sup> China's National Health Commission has also categorised COVID-19 as a Class B infectious disease and taken preventive and control measures for Class A infectious diseases. Besides, as COVID-19 can be transmitted through respiratory droplets, contact transmission, and aerosol transmission and has a long incubation period,<sup>14-16</sup> many people may be asymptomatic virus

carriers,<sup>17</sup> which makes COVID-19 extremely difficult to prevent and control.

At present, China has achieved a major victory in the prevention and control of COVID-19, but still shows a trend of long-term, repeated local outbreaks.<sup>18</sup> Therefore, China's hospitals are also well prepared for a long-term battle against COVID-19. However, during the COVID-19 pandemic, a real conflict between patients' medical needs and epidemic prevention and control has emerged. Therefore, effective hospital emergency management methods are particularly important at this time.

In this paper, the experience of a general hospital in Zhejiang Province, China in wound care clinic management during the COVID-19 pandemic is shared. Zhejiang Province is located in the eastern coastal area of China with a large population and a large number of foreigners. Thus, the number of patients seeking medical treatment is also huge, and the sources are complex. Besides, it is a provincial-level comprehensive hospital. At present, the items of the wound care clinic include pressure injuries, venous leg ulcers, diabetic wounds, postoperative refractory wounds, and tumour wounds. Apart from that, annually, there are more than 8000 cases wound care clinic cases. Therefore, hospitals are facing remarkable medical and nursing pressure during the COVID-19 pandemic, and taking innovative and effective emergency management measures is crucial to prevent the collapse of the medical care system.

Hospital departments should collaborate to adapt to emergency management in the time of crisis, such as the COVID-19 outbreak. Wound care is often mistakenly regarded as an elective care service. Acute and chronic wounds are common and frequently occur in surgery, while regular debridement and dressing change are the main means of wound care.<sup>19,20</sup> If regular care is not carried out according to the diagnosis and treatment plan, the risk of wound infection increases dramatically, which leads to local necrosis, systemic infection, and even death.<sup>21,22</sup> Therefore, how to do a good job in the diagnosis and treatment of different groups of wounded patients and meet the wound care needs of patients during the COVID-19 pandemic is of great importance in the emergency management of wound care clinics in general hospitals.<sup>23,24</sup>

Wound specialist nurses must clearly understand how to conduct a comprehensive assessment based on the patient's wound condition, residence, and economic situation and take individualised management measures to prevent the gathering of people and the spread of the virus to the greatest extent possible. In addition, reform and material security are also key steps.

In response to the impact of the COVID-19 pandemic, particularly the outbreak of the Omicron strain, the wound care clinic has taken emergency management measures, optimised the on-site diagnosis and treatment process, launched online remote nursing services, improved the human resource management of wound specialist nurses, and strengthened wound care. Moreover, conducting nursing clinic disinfection control, strengthening virus protection measures, and adhering to the epidemic prevention and control could achieve better management results. Other than that, the emergency management measures of the wound care clinic during the COVID-19 epidemic have been highly evaluated by experts, and no infection cases have occurred so far, which indicates that the measures are effective. In this case, the management experience of the wound care clinic has been extended to other hospitals for implementation, thus maximising the practical effect of the management experience and jointly improving the performance of emergency management in the wound care clinic during the COVID-19 pandemic to ensure the continued operation of the wound care clinic.

Also, it is expected to share the management experience of wound care clinics in China and innovative experiences during the COVID-19 pandemic with wound care experts from various countries to ensure that the wound care needs of patients around the world are met.

## 1.1 | Online appointments for medical treatment

The wound care clinic suspends its on-site registration service and cooperates with the hospital information department to develop a time-based appointment registration system with a time gradient of half an hour, as reported in Figure 1, and timely notify existing and potential patients about the move via the hospital's official website, WeChat public account, news reports, newspaper, bulletin boards, and other channels. For patients, they can confirm the appointment time by the official WeChat account of the hospital. After the appointment is successful, the background system will remind the patient via text messages that they must come to the hospital strictly according to the appointment time.

When patients come to the hospital for treatment, they must first take a temperature measurement at the

The screenshot displays a mobile application interface for an online appointment system. At the top, it identifies the clinic as '普通门诊' (General Outpatient) and '造口护理门诊 Wound and stoma care clinic'. Below this, a list of appointment details is shown:

- 院区 Hospital: Hospital name
- 科室 Department: 造口护理门诊 Wound and stoma care clinic
- 就诊日期 Date of treatment: 2022-01-19
- 就诊时间 Treatment time: 2号 08:28-08:58 NO:2
- 就诊人 Patient: patient name
- 就诊卡 Medical card: 4213135(病历号) Medical record number
- 挂号费 Registration fee: 0
- 支付方式 Payment method: 到院支付 Pay on the spot

Below the details, there is a section titled '选择就诊时间 Choose treatment time' with three options:

- 2号 08:28-08:58 NO:2
- 3号 09:11-09:41 NO:3
- 5号 10:37-11:07 NO:5

At the bottom, there is a '取消 Cancel' button.

**FIGURE 1** Online appointment registration system for wound care clinics. Wound patients can register through mobile phones or computers and choose the time of nursing according to their own needs

hospital's door and conduct COVID-19 epidemic investigations that include body temperature measurements and the presentation of the patients' and their companions' health codes. In terms of the health code, it is based on actual personal data and is input in an online database that can be accessed through the Internet. After the application is reviewed by the government background system, a personal QR code can be generated. Besides, it can display information, such as whether the user was in contact with high-risk groups, went to medium or high-risk areas, and was vaccinated, as shown in Figure 2.

Only those whose health code is green can enter the wound care clinic. If the health code is yellow or red, or the patient passed through high-risk areas, the system will immediately notify the hospital's infection department, where the patient and/or the patient's companion will be observed, isolated, and tested for COVID-19 by nucleic acid testing. At the same time, the air and items



**FIGURE 2** Health code system interface. Contains personal information, scan time, and COVID-19 vaccination status. The colour of the QR code is adjusted according to the government's data platform

in the area they have visited are immediately cleaned. If the nucleic acid test is negative, medical treatment can be performed as normal, whereas if it is positive, the result is immediately reported to the hospital infection department, and the COVID-19 epidemic emergency system is activated, when patients can obtain wound care guidance through the Internet hospital. However, if the patient and his/her companion have green codes, the guide nurse will inform the wound specialist nurse online via the computer system.

Only patients are allowed to enter the clinic area, and masks must be worn. Particularly, those with limited mobility are sent to the wound care clinic by the guide nurse. Then, new patients can enter the consultation room once it is empty.

The wound specialist nurse will ask 'three questions' during the consultation to ascertain whether the patient had a history of staying or passing in medium-risk and high-risk areas (adjusted in real time according to the national release), a history of contact with confirmed or suspected cases, and a recent history of fever and cough. If the patient has suffered from a fever or cough recently, their body temperature will be measured again. Here, it should be noted that the information of each patient is recorded in the wound care clinic patient register, and the manual registration information is reported to the hospital infection department for record management.

A waiting system is implemented for patients who have not made an online appointment and registration,

and the treatment will be arranged in the gap time of the appointment time period or after the appointment of patient care, while all patients with fever were referred to the fever clinic for treatment. For mild wounds or wounds in the healing period, the wound specialist nurse can assess the wound condition, formulate a nursing plan, prescribe the required wound dressings, and recommend the nearest community hospital according to the patient's residence to reduce the risk of infection during the patient's journey. In a word, the wound specialist nurses and patients praised the online appointment system, because the waiting time for patients to seek nursing was reduced, and the order of the clinic was maintained. In view of the influential effect of the online appointment system, the wound care clinic of our hospital will adopt it for a long time in the future.

During the Covid-19 pandemic, because of government and hospital epidemic control measures, as well as patients' fear of the virus, the number of patients coming to the wound care clinic has decreased. According to statistics, when the COVID-19 epidemic did not occur, the average daily number of patients in the wound care clinic in our hospital was 20 cases/d, whereas after the Covid-19 outbreak, the number of patients was reduced to 12 cases/d, with a reduction rate of 40%. Furthermore, to meet the nursing needs of wound patients to the greatest extent, we have also adopted the method of online guidance to provide patients with wound care services, and cooperated with community medical staff to guarantee the quality of wound care during the COVID-19 epidemic.

## 1.2 | Implementation of remote online nursing coaching

Via our hospital's remote wound care management system, online diagnosis and treatment guidance are implemented for long-distance and mobility-impaired patients, as described in Figure 3. A community nurse establishes and manages the patient's electronic information file that includes the patient's name, age, phone number, home address and WeChat ID, the phone number of the primary caregiver, diagnosis, condition record, wound treatment plans, wound photos, bacterial culture results, consultation results, and recommendations, which are shared by a team of community doctors and wound specialist nurses. Here, it should be mentioned that the community regularly organises and summarises patient information and relays the information to the wound specialist nurse team who then conducts comprehensive assessments based on wound data and pictures and communicates with community doctors for



FIGURE 3 Examples of the basic information of wound patients and wound conditions recorded in the wound care management system

guiding diagnosis and treatment, as reported in Figure 4.

Community hospital medical staff (who are wound specialists trained in our hospital) upload the patient's basic information, diagnosis, condition records, photos before and after wound treatment, treatment plan, bacterial culture, and other materials to the remote wound care management system after admission to achieve information sharing among wound specialist nurses. If community doctors find that the treatment effect is poor or cannot be treated during the wound treatment process, they can apply online for remote online consultation. Then, after receiving the consultation request, wound specialist nurses will check the patient's previous diagnosis and treatment plan and the current wound condition online through the remote wound management system, followed by communicating via voice or video to discuss the diagnosis and treatment plan together.

For wounds that require medical assistance, such as severely infected wounds, the team of wound specialist nurses jointly develops a nursing plan and assigns wound specialist nurses to the community for on-site diagnosis and treatment. After communicating with the community doctor, the wound specialist nurse will change the dressing, instruct the community doctor, and give the treatment suggestions and precautions. Apart from that, other patients



FIGURE 4 Community doctors guide patients on how to deal with difficult wounds via WeChat

and medical staff can also provide medical consultation and services by online diagnosis and treatment in the remote wound care management system, so that more patients with chronic wounds can receive professional wound care advice and guidance. For patients with severe wound infection or haemorrhage, they will be referred and admitted to the hospital after temperature measurement and the nucleic acid test according to the hospitalisation process during the COVID-19 pandemic period.

For patients who are unable to go to the hospital, the wound care clinic provides home care services. They can make an appointment by calling the wound care clinic. Then, the wound care clinic arranges wound specialist nurses to provide home wound care services according to the needs of the patients, but the service route is 10 miles away. For patients beyond the service distance, the wound care clinic will contact the patients in their communities, and wound specialist nurses will cooperatively provide patients with wound care services through remote online guidance.

Wound clinics in the United States,<sup>25</sup> Italy,<sup>26</sup> and other countries<sup>27</sup> have also adopted telemedicine during the COVID-19 pandemic. The effectiveness and safety of telemedicine have been verified, and it has also become a new and recommended medical method. Actually, it is similar to the Internet hospitals in China, where wound patients can ask doctors and nurses for help via the Internet, which does increase the convenience of patients and access to medical care.

### 1.3 | Reasonable arrangement of human resources for wound specialist nurses

Human resources are the greatest wealth of hospitals and the most powerful weapon in fighting the pandemic. Therefore, reasonable human resource management is particularly important. At present, the hospital has six wound specialist nurses: four international ostomy therapists, one Zhejiang Province wound specialist nurse, and one hospital-level wound specialist nurse.

During the COVID-19 pandemic, strict epidemic prevention and control management is required. The wound care clinic conducts responsibility division management for wound specialist nurses. To be specific, they are divided into clinics and wards, in line with the top three areas of responsibility to prevent cross-infection between nurses and patients and ensure the quality of wound care.

In the past, the wound specialist nurses in the hospital implemented a system of outpatient visits and were jointly responsible for the diagnosis and treatment of wound patients in each area of responsibility.

According to the new management and control requirements of the wound care clinic during the epidemic period, international ostomy therapists A and B are in charge of wound care clinics now, while international ostomy therapist C is responsible for general inpatients and inpatients with clear fever causes; besides, Zhejiang Province wound specialist nurses take care of hospitalised patients with unclear fever causes; international ostomy therapist D is responsible for remote online guidance and the supplementary deployment of wound care materials in community hospitals; and the hospital-level wound specialist nurses perform the follow-up of outpatients, the arrangement of wound information, and the management of disease prevention and control materials, as presented in Figure 5.

The mental state of employees affects their work behaviour and state to a great extent. During the COVID-19 pandemic, adhering to strict epidemic prevention and control requirements for a long time was crucial, which however resulted in the current situation of tight human resources in the hospital.

The hospital requires all wound specialist nurses to implement rotating vacations. Wound specialist nurses have been on the front line of clinical nursing work for a long time and continue to face enormous pressure, physically and psychologically. In this regard, the wound care clinic nurse manager takes the following steps.

The wound specialist nurses measure and register their body temperatures before and after they get off work every day, and the hospital provides 24-hour hot water for washing. Besides, they need to report the health status of the co-residents. Moreover, the psychology department of the hospital has offered a 24-hour online consultation as a way of talking, and the nursing department sends condolence text messages to each wound specialist nurse every week and makes phone calls for comforting the family members. Beyond that, the rest time that the wound specialist nurses did not take during the epidemic is retained and could be spent after the epidemic. Importantly, the salary of wound specialist nurses is raised by about 20%.

### 1.4 | Implementation of virus prevention and control measures

Following normalised prevention and control measures and procedures is the key to ensuring the quality of wound care during the COVID-19 pandemic. Wound specialist nurses study and implement relevant guidelines and procedures on a monthly basis, including Technical Guidelines for the Prevention and Control of COVID-19 Infection in Medical Institutions (1st Edition),<sup>28</sup>

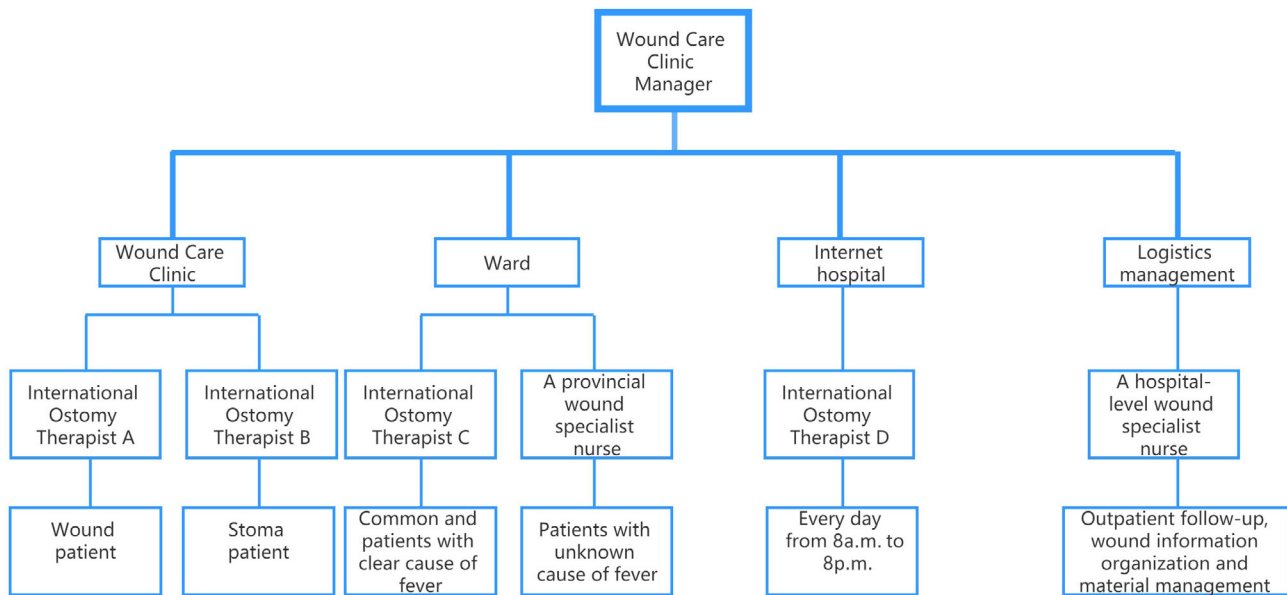


FIGURE 5 Arrangement of wound specialist nurses during the COVID-19 outbreak

Guidelines for the Use of Common Medical Protective Equipment in the Prevention and Control of COVID-19 (Trial),<sup>29</sup> Procedures for Wearing and Removing Medical Disposable Surgical Masks,<sup>30</sup> the process of removing medical protective clothing for medical staff, and the seven-step hand washing process.

Differentiated protective measures are taken targeting different patients for infection control and the management of epidemic prevention materials. First-level protection is adopted for outpatients and inpatients with ordinary wound cases. Other than that, the standard protective items used by wound specialist nurses include disposable surgical masks, disposable hats, protective glasses, and disposable latex gloves. To be specific, gloves are only used once, and masks and hats are changed every 4 hours. As for protective glasses, they can be changed every shift but should be replaced immediately if they are splashed.

A protection level slightly higher than the first-level protection is performed for hospitalised patients with a clear cause of fever. The standard protective items for wound specialist nurses include N95 masks, disposable hats, protective glasses, face screens, surgical gloves, and shoe covers. Besides, the replacement standards for protective items remain the same as those in the first-level protection.

Secondary protection is used for hospitalised patients with unclear causes of fever. The standard protective items for wound specialist nurses consist of isolation gown, N95 mask, disposable hat, protective glasses, face shield, surgical gloves, shoe covers, and isolation gowns for each person. Moreover, the replacement standard of

other protective items is the same as that of primary protection.

Third-level protection is implemented for outpatients undergoing unexplained fever. The standards of personal protective equipment for wound specialist nurses are one-piece protective clothing, N95 masks, disposable hats, protective glasses, face shields, two pairs of surgical gloves, and shoe covers. All protective items are replaced after each use. Before and after wound care, the hands must be cleaned with a hand sanitizer, rinsed thoroughly under running water, and disinfected with 75% ethanol or a chlorine-containing disinfectant. If exposure occurs during debridement and dressing changes, the hands should be washed and disinfected immediately.

Standard wound dressing procedures contain evaluation, disinfection, debridement, irrigation, dressing placement, and other steps. Tissue fluid/blood splash, shear injury, and other unexpected situations may occur during wound debridement. Meanwhile, a risk of splash may also occur during flushing. Therefore, safety protection during dressing change is highly necessary. In terms of wounds that require debridement and irrigation, protective glasses and face shields must be applied during operation and must be replaced in the event of splashes.

Understanding and cooperating with the patient are essential before and after the wound dressing change. The 180° parallel removal method is used when tearing off the dressing to prevent the splash of foreign body and tissue fluid in the wound. Local anaesthesia is used before debridement to avoid pain and agitation, leading to shear injuries. After obtaining the consent of their family members, unconscious patients should be

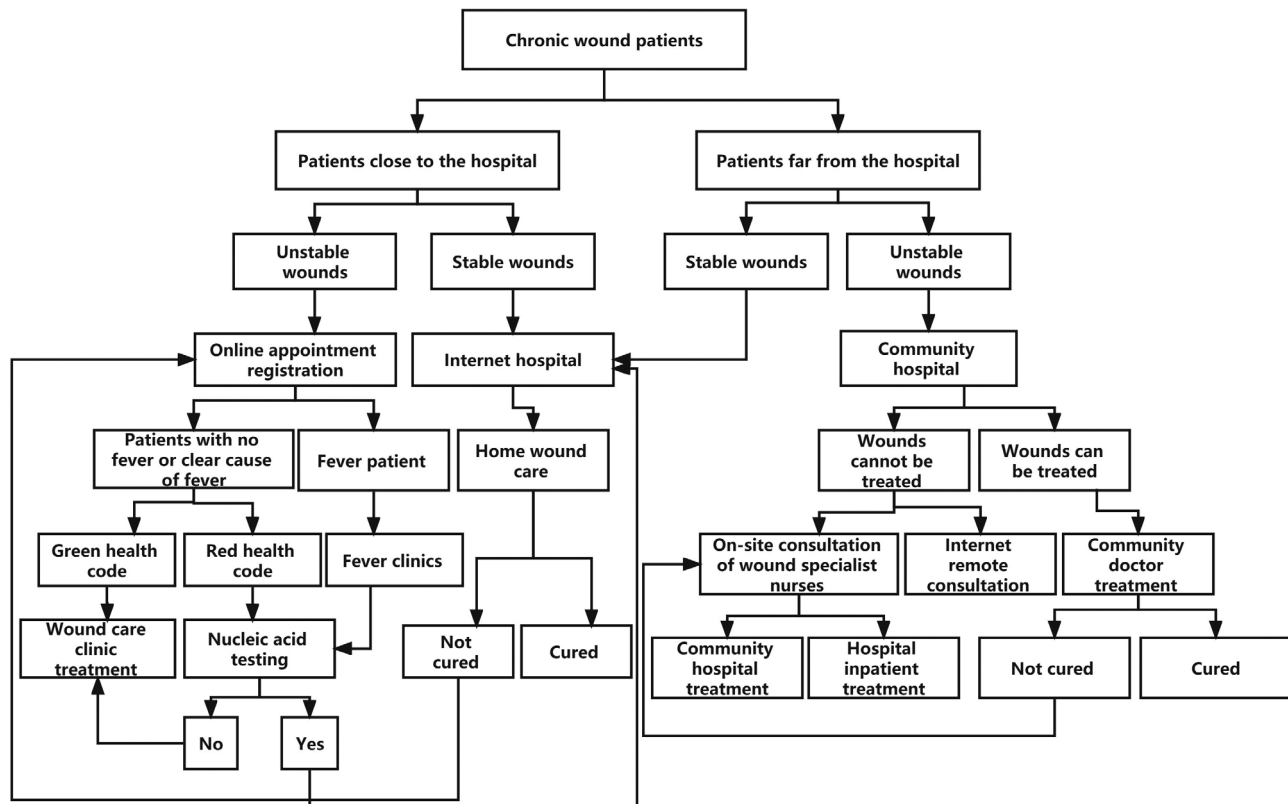


FIGURE 6 Flow chart of chronic wound management during the COVID-19 pandemic

appropriately restrained. The vortex irrigation method can reduce the splash of liquid during the irrigation process, and units with conditions can choose the wound irrigation pool. Based on the specific assessment of the patient's wound, the new dressing should be used reasonably, and the dressing change interval should be appropriately extended to 3–4 days. Apart from that, the medical process is recommended according to the actual situation of the patient, as well as the hospital's COVID-19 epidemic management requirements and the patient's wound care needs, as reported in Figure 6.

Taking the above precautions can allow nurses to be fully protected, also reducing the risk of transmission of the Covid-19 virus. Protective measures only protect nurses through various protective equipment, and will not significantly increase the workload of nurses; on the whole this will generate a certain impact on nurses' work efficiency. When the COVID-19 epidemic did not occur, the average work efficiency of each wound specialist nurse in our hospital was 12 cases/d, which was decreased to 10 cases/d after taking protective measures, a reduction rate of 16.7%. In addition, the protective equipment used by nurses is provided by the government and the hospital, and will not add this part of the cost to the patient's medical expenses, thus minimising the economic burden of Covid-19 on patients.

### 1.5 | Strengthening the environmental management of clinics

Doors and windows are opened 30 minutes before the opening of the wound care clinic to ensure indoor air circulation, and the outpatient clinic is ventilated for 30 minutes before performing disinfection work. The clinic is equipped with an air purification and disinfection machine, aiming to ensure continuous disinfection when patients are present. Ultraviolet disinfection is used before the outpatient clinic opens and after it closes. The schedule of disinfection is: 7:00–8:00, 12:00–13:00, and 17:00–18:00.

A 2000 mg/L chlorine-containing disinfectant is used for ground disinfection. If a wound cleaning liquid is used, absorbent materials need to be removed before disinfection. Disposable hydrogen peroxide-containing wipes are adopted in the surface disinfection of items, including dressing storage cabinets, physiotherapy devices, ultrasonic debridement knives, dressing changing beds, dressing changing stools, tripods, computers, mice, keyboards, desks, and handles. The used disposable protective equipment should be placed in the protective dirt disposal box. Meanwhile, the reused items should be placed in a special disinfection bucket. Moreover, taking the used protective equipment out of the clinic is strictly forbidden.



After dressing changes, dressings and debridement tissues are placed in double-layer yellow medical waste bags, which are sprayed with a disinfectant that contains 1000 mg/L chlorine after each placement, and sealed in time. Tissue scissors, tweezers, spatula, and other debridement instruments are washed with normal saline to remove blood and tissue. At the same time, the instruments used by each patient are placed in a yellow medical garbage bag separately and the QR code of the unpacked instruments is pasted on the garbage bag, as reported in Figure 7. The name of the nurse and patient are marked on the seal. Finally, the garbage bags are placed in the 'contaminated instrument' box and sent to the supply room for cleaning and disinfection with the purpose of satisfying the need for follow-up tracing.

### 1.6 | Material and equipment management

Protective items and wound dressing materials are managed by a hospital-level wound specialist nurse. Protective items are counted and registered daily to determine the storage capacity of masks, protective clothing, isolation gowns, protective glasses, face shields, gloves as well as other materials in the undergraduate room. After receiving the items, the wound specialist nurse needs to register the type and quantity of the items and sign the registration book. Protective equipment is distributed according to the different risk levels of the three major responsibility areas.

All wound specialist nurses have one protective goggle and face screen per person per day. The remaining protective equipment is budgeted based on the number of appointments of patients in different areas of the outpatient clinic and ward, which is immediately dispatched from the warehouse in case of material shortage. This budgeting is essential to ensure sufficient protective equipment for wound care clinics and to timely contact the logistics department and the hospital infection department to ensure the supply of materials.

Protective glasses and face shields that are in short supply are wiped with 1000 mg/L effective chlorine and sent to the supply room for disinfection. Additionally, the number of dressing materials and equipment required by wound care clinics and wards should be estimated daily to lower the accumulation of dressing materials in wound care clinics and the excessive carrying of items during dressing changes in wards to avoid item pollution.

Effective equipment management can avoid the hidden danger of transmission between patients. Currently, the



**FIGURE 7** Medical garbage bags with QR code labels. The nurses and patients who used the items can be tracked by scanning the QR code

wound care clinic is equipped with two ultrasonic debridement knives, and a functional division of equipment use is also implemented. At present, one ultrasonic debridement knife belongs to the wound care clinic for exclusive use. After debridement, the cutter head must be replaced. Besides, the surface of the machine and the connecting wires should be wiped with a disposable wipe containing hydrogen peroxide. The ultrasonic debridement knives used in the ward are applied in the following order: critical condition, clear cause of fever, and multi-drug resistance. After debridement, the cutter head is replaced, and the surface of the machine and the connecting wire are wiped twice, each with a disposable hydrogen peroxide-containing wipe in the dressing room. In terms of inpatients with unclear causes of fever, mechanical debridement and drug debridement can be used in accordance with the situation. If necessary, the ultrasonic debridement knife used in the ward is placed on a protective cover for operation. Meanwhile, the disinfection method of the ultrasonic debridement knife in the ward is used for disposal.

Medicine boxes are used in different areas for common inpatients (including those with a clear cause of fever) and inpatients with an unclear cause of fever. By pasting different colours and text labels on the top of the boxes, the boxes can be effectively distinguished. The medicine boxes used by ordinary inpatients are indicated by white labels, and the medicine boxes of hospitalised patients with unknown causes of fever are indicated by red labels. The boxes are placed in different areas, as reported in Figure 8. When the wound specialist nurse brings the dressing box to different departments, the box is placed in the preparation room and cannot be brought to the bedside of the patient. According to the wound assessment, the materials and instruments to be used are placed on the dressing cart for use. Different departments need to wipe the surface of the box twice with disposable hydrogen peroxide wipes.



FIGURE 8 Medicine boxes with colour-coded labels for different patients

## 2 | CONCLUSION

The world is facing the crisis of the COVID-19 pandemic that is featured with strong infectivity, fast transmission, long incubation periods, and fast mutation speed, and besides, mutant strains of its causative agent, SARS-CoV-2, such as the Delta and Omicron strains, have emerged, which worsened the global situation of the pandemic and made COVID-19 more difficult to control.

Wound care experts should be fully prepared in the face of this crisis through safety protection to avoid cross-infection and the establishment of diagnosis and treatment channels, thus further ensuring the quality of patient care. In this case, innovative wound care clinic management systems and processes can play a key role. Considering that, in this paper, the emergency management measures and experiences of the wound care clinics

in general hospitals of China during the COVID-19 pandemic are shared.

Although the medical system and the severity of the COVID-19 pandemic are different in each country, the successful management experience of wound care clinics in different countries can be learned for making localised improvements according to the actual situation of the hospital, thus finally realising the normal operation of wound care clinics.

It is expected that all countries can work together regardless of race to ensure that every wound patient is cared for in the COVID-19 pandemic. In fact, the common vision of wound care workers around the world is to be able to provide adequate care during the pandemic, which is a reflection of the professional ethics and core values of nursing.

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### CONFLICT OF INTEREST

The authors declare no conflicts of interest.

### AUTHOR CONTRIBUTIONS


**Ronnell Dela Rosa:** Conceptualization and supervision. **Zhenhua He:** Writing original draft preparation. **Ronnell Dela Rosa and Zhenhua He:** Writing, review, and editing. **Zhenhua He:** Literature search. **Ronnell Dela Rosa and Zhenhua He:** Algorithm for care elaboration. **Ronnell Dela Rosa:** Oversaw implementation and validation. All authors have read and agreed to the published version of the manuscript.

### DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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